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Interleukin-3-associated expression of gangliosides in mouse myelogenous leukemia NFS60 cells introduced with interleukin-3 gene: expression of ganglioside GD1a and key involvement of CMP-NeuAc:lactosylceramide alpha 2-->3-sialyltransferase in GD1a expression.

Biochemistry. 1995 Jul 25;34(29):9356-67. Erratum in: Biochemistry 1995 Nov 7;34(44):14616.

PMID: 7626605 [PubMed - indexed for MEDLINE]

☐ **2:** [Taga S, Tetaud C, Mangeney M, Tursz T, Wiels J.](#) Related Articles, Links

Sequential changes in glycolipid expression during human B cell differentiation: enzymatic bases.

Biochim Biophys Acta. 1995 Jan 3;1254(1):56-65.

PMID: 7811747 [PubMed - indexed for MEDLINE]

☐ **3:** [Oehrlein R, Hindsgaul O, Palcic MM.](#) Related Articles, Links

Use of the "core-2"-N-acetylglucosaminyltransferase in the chemical-enzymatic synthesis of a sialyl-LeX-containing hexasaccharide found on O-linked glycoproteins.

Carbohydr Res. 1993 May 21;244(1):149-59.

PMID: 8101768 [PubMed - indexed for MEDLINE]

☐ **4:** [Weinstein J, de Souza-e-Silva U, Paulson JC.](#) Related Articles, Links

Purification of a Gal beta 1 to 4GlcNAc alpha 2 to 6 sialyltransferase and a Gal beta 1 to 3(4)GlcNAc alpha 2 to 3 sialyltransferase to homogeneity from rat liver.

J Biol Chem. 1982 Nov 25;257(22):13835-44.

PMID: 7142179 [PubMed - indexed for MEDLINE]

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Detection of beta-galactosyl(1 leads to 4)N-acetylglucosaminide
alpha(2 leads to 3)-sialyltransferase activity in fetal calf liver and
other tissues.

J Biol Chem. 1981 Apr 10;256(7):3159-62.

PMID: 7204397 [PubMed - indexed for MEDLINE]

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L2	0	("2" adj "3" adj sialytransferase) near6 campylobacter	USPAT	OR	OFF	2006/04/13 12:39

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 enhanced during
 second quarter; strategies may be affected

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L1          45 (2,3-SIALYTRANSFERASE)
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in at least one of the files. Refer to file specific help messages
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L2  ANSWER 1 OF 39  CAPLUS  COPYRIGHT 2006 ACS on STN
AN  2005:186624  CAPLUS
TI  Effects of elevated ammonium on gene expression in CHO cell
culture
AU  Chen, Peifeng; Harcum, Sarah W.
CS  Department of Chemical Engineering, Clemson University, Clemson,
SC,
    29634, USA
```

SO Abstracts of Papers, 229th ACS National Meeting, San Diego, CA,
United States, March 13-17, 2005 (2005), BIOT-394 Publisher: American
Chemical Society, Washington, D. C.
CODEN: 69GQMP
DT Conference; Meeting Abstract
LA English

=> s l2 (6A) campylobacter
PROXIMITY OPERATOR LEVEL NOT CONSISTENT WITH
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=> d l3 bib ab

L3 ANSWER 1 OF 1 BIOSIS COPYRIGHT (c) 2006 The Thomson
Corporation on STN
AN 2004:237501 BIOSIS
DN PREV200400237395
TI Lipopolysaccharide alpha-2,3 sialyltransferase
of **campylobacter** jejuni and its uses.
AU Gilbert, Michel [Inventor, Reprint Author]; Wakarchuk, Warren W.
[Inventor]
CS Quebec, Canada
ASSIGNEE: National Research Council of Canada, Ottawa, Canada
PI US 6709834 20040323
SO Official Gazette of the United States Patent and Trademark
Office Patents,
(Mar 23 2004) Vol. 1280, No. 4.
<http://www.uspto.gov/web/menu/patdata.html>
. e-file.
ISSN: 0098-1133 (ISSN print).
DT Patent
LA English
ED Entered STN: 28 Apr 2004
Last Updated on STN: 28 Apr 2004
AB The structure and specificity of a recombinant
alpha2,3-sialyltransferase
from *Campylobacter* spp., is disclosed. Also provided are
methods for
using the alpha2,3-sialyltransferase in the production of desired
carbohydrate structures and nucleic acids that encode the
sialyltransferase.

=> d l2 1-39 bib ab

L2 ANSWER 1 OF 39 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2005:186624 CAPLUS
TI Effects of elevated ammonium on gene expression in CHO cell
culture

AU Chen, Peifeng; Harcum, Sarah W.
 CS Department of Chemical Engineering, Clemson University, Clemson,
 SC, 29634, USA
 SO Abstracts of Papers, 229th ACS National Meeting, San Diego, CA,
 United States, March 13-17, 2005 (2005), BIOT-394 Publisher: American
 Chemical Society, Washington, D. C.
 CODEN: 69GQMP
 DT Conference; Meeting Abstract
 LA English
 AB The neg. effects of ammonium on recombinant protein production
 and glycosylation have been well investigated, but the interaction
 of ammonium and glycosylation events have not been completely determined In
 this study, Chinese hamster ovary (CHO) cells were cultured under elevated
 ammonium levels. The mRNA expression profiles for 14 glycosylation or
 glycosylation related genes were evaluated by quant. real time
 reverse transcriptase PCR (QRT-PCR). Primers were designed using
 available CHO cell or golden hamster genes from GenBank. Most of the genes
 were not significantly affected by the elevated ammonium stress.
 However, critical genes for sialylation, the CMP-sialic acid transporter and a 2,
 3-sialytransferase, had significant lower expression
 levels in ammonium stressed cultures. Interestingly, the
 UDP-galactose transporter gene expression was higher in the ammonium stressed
 culture. Addnl., the gene expression level of sialidase and sialidase
 activity were not affected by ammonium. This study indicates that ammonium
 inhibits sialylation mainly through CMP-sialic acid transporter and a 2,
 3-sialytransferase transcription levels.

L2 ANSWER 2 OF 39 BIOSIS COPYRIGHT (c) 2006 The Thomson
 Corporation on STN
 AN 2005:485237 BIOSIS
 DN PREV200510259492
 TI Effects of elevated ammonium on gene expression in CHO cell
 culture.
 AU Chen, Peifeng [Reprint Author]; Harcum, Sarah W.
 CS Clemson Univ, Dept Chem Engn, Clemson, SC 29634 USA
 pchen@clemson.edu
 SO Abstracts of Papers American Chemical Society, (MAR 13 2005)
 Vol. 229, No.

Part 1, pp. U241-U242.

Meeting Info.: 229th National Meeting of the
American-Chemical-Society.

San Diego, CA, USA. March 13 -17, 2005. Amer Chem Soc.

CODEN: ACSRAL. ISSN: 0065-7727.

DT Conference; (Meeting)

Conference; Abstract; (Meeting Abstract)

LA English

ED Entered STN: 16 Nov 2005

Last Updated on STN: 16 Nov 2005

L2 ANSWER 3 OF 39 BIOSIS COPYRIGHT (c) 2006 The Thomson
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AN 2004:237501 BIOSIS

DN PREV200400237395

TI Lipopolysaccharide alpha-2,3 **sialytransferase**
of campylobacter jejuni and its uses.

AU Gilbert, Michel [Inventor, Reprint Author]; Wakarchuk, Warren W.
[Inventor]

CS Quebec, Canada

ASSIGNEE: National Research Council of Canada, Ottawa, Canada

PI US 6709834 20040323

SO Official Gazette of the United States Patent and Trademark
Office Patents,

(Mar 23 2004) Vol. 1280, No. 4.

<http://www.uspto.gov/web/menu/patdata.html>
. e-file.

ISSN: 0098-1133 (ISSN print).

DT Patent

LA English

ED Entered STN: 28 Apr 2004

Last Updated on STN: 28 Apr 2004

AB The structure and specificity of a recombinant
alpha2,3-sialyltransferase

from Campylobacter spp., is disclosed. Also provided are
methods for

using the alpha2,3-sialyltransferase in the production of desired
carbohydrate structures and nucleic acids that encode the
sialyltransferase.

L2 ANSWER 4 OF 39 BIOSIS COPYRIGHT (c) 2006 The Thomson
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DUPLICATE 1

AN 2004:297177 BIOSIS

DN PREV200400297326

TI Functional analysis of the combined role of the O-linked
branching enzyme

core 2 beta1-6-N-glucosaminyltransferase and dimerization of
P-selectin

glycoprotein ligand-1 in rolling on P-selectin.

AU Smith, McRae J.; Smith, Bryan R. E.; Lawrence, Michael B.
[Reprint

Author]; Snapp, Karen R.
CS Dept Biomed Engn, Univ Virginia, Box 800759, Charlottesville,
VA, 22903,
USA
mbl2a@virginia.edu
SO Journal of Biological Chemistry, (May 21 2004) Vol. 279, No. 21,
PP. 21984-21991. print.
CODEN: JBCHA3. ISSN: 0021-9258.
DT Article
LA English
ED Entered STN: 23 Jun 2004
Last Updated on STN: 23 Jun 2004
AB Leukocyte P-selectin glycoprotein ligand-1 (PSGL-1) is expressed
as a homodimer and mediates leukocyte rolling through interactions
with endothelial P-selectin. Previous studies have shown that PSGL-1
must be properly modified by specific glycosyltransferases including
alpha1,3-fucosyltransferase-VII, core 2
betal-6-N-glucosaminyltransferase
(C2GlcNAcT-I), one or more alpha2,3-sialyltransferases, and a
tyrosulfotransferase. In addition, dimerization of PSGL-1
through its sole extracellular cysteine (Cys320) is essential for rolling on
P-selectin under shear conditions. In this report, we measured
the contributions of both C2GlcNAcT-I glycosylation and dimerization
of PSGL-1 to adhesive bonds formed during tethering and rolling of
transfected cell lines on purified P-selectin. Tethering to P-selectin under flow
increased with dimerization compared with cells expressing
monomeric PSGL-1 (referred to as C320A). The rolling defects (decreased
cellular accumulation, PSGL-1/P-selectin bond strengths and tethering
rates, and increased velocities and skip distance) demonstrated by
transfectants expressing monomeric PSGL-1 could be overcome by increasing the
substrate P-selectin site density and by overexpressing C2GlcNAcT-I in
C320A transfectants. Two molecular weight variants of PSGL-1 were
isolated from cell lines transfected with PSGL-1, C320A, and/or C2GlcNAcT-I
cDNAs, and these differences in electrophoretic mobility appeared to
correlate with C2GlcNAcT-I expression. C320A transfectants expressing low
molecular

weight PSGL-1 had lower C2GlcNAcT-I levels (measured by reactivity to core 2 specific linkage antibody, CHO-131) and compromised rolling on P-selectin (regardless of site density) compared with C320A cells with high levels of C2GlcNAcT-I and high molecular weight PSGL-1. Both C2GlcNAcT-I glycosylation and PSGL-1 dimerization increased the rate of tethering to P-selectin under flow, whereas C2GlcNAcT-I levels primarily influenced tether bond strength.

L2 ANSWER 5 OF 39 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN

AN 2005:35200 BIOSIS

DN PREV200500038033

TI Chemoenzymatic synthesis of diverse asparagine-linked alpha-(2,3)-sialyloligosaccharides.

AU Fukae, Kazuhiro; Yamamoto, Naoki; Hatakeyama, Yuri; Kajihara, Yasuhiro

[Reprint Author]

CS Grad Sch Integrated SciKanazawa Ku, Yokohama City Univ, 22-2 Seto,

Yokohama, Kanagawa, 2360027, Japan

kajihara@yokohama-cu.ac.jp

SO Glycoconjugate Journal, (2004) Vol. 21, No. 5, pp. 243-250. print.

ISSN: 0282-0080 (ISSN print).

DT Article

LA English

ED Entered STN: 19 Jan 2005

Last Updated on STN: 19 Jan 2005

AB Partial sialyl transfer reaction by alpha-(2,3)-sialyltransferase toward

(Gal-beta-1,4-GlcNAc-beta-1,2-Man-alpha-1,6/1,3-)2Man-beta-1,4-GlcNAc-beta-1,4-GlcNAc-beta-1-asparagine- Fmoc 1 was examined to obtain mono-alpha-(2,3)-sialyloligosaccharides and then branch-specific exo-glycosidase digestion (beta-D-galactosidase, N-acetyl-beta-D-glucosaminidase and alpha-D-mannosidase) toward the asialo-branch was

performed to obtain diverse asparagine-linked complex type alpha-(2,3)-sialyloligosaccharides. In addition, two kinds of disialyloligosaccharides in which the sialyl linkage was a mixture of

alpha-(2,3)- and alpha-(2,6)-types were also specifically prepared by an

additional alpha-(2,6)-sialyltransferase reaction toward mono-alpha-(2,3)-sialyloligosaccharides thus obtained.

L2 ANSWER 6 OF 39 EMBASE COPYRIGHT (c) 2006 Elsevier B.V. All rights

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AN 2003295227 EMBASE

TI Glycosyltransferase activity can be modulated by small conformational

changes of acceptor substrates.

AU Galan M.C.; Venot A.P.; Boons G.-J.

CS G.-J. Boons, Complex Carbohydrate Research Center, University of Georgia,

220 Riverbend Road, Athens, GA 30602, United States.

gjboons@ccrc.uga.edu

SO Biochemistry, (22 Jul 2003) Vol. 42, No. 28, pp. 8522-8529. .

Refs: 69

ISSN: 0006-2960 CODEN: BICHAW

CY United States

DT Journal; Article

FS 029 Clinical Biochemistry

LA English

SL English

ED Entered STN: 14 Aug 2003

Last Updated on STN: 14 Aug 2003

AB A range of N-acetyllactosamine derivatives (compounds 4-7) that have

restricted mobilities around their glycosidic linkages have been employed to determine how small changes in conformational properties of an oligosaccharide acceptor affect catalytic efficiencies of glycosylations

by α -2,6- and α -2,3-sialyltransferases and α -1,3-fucosyltransferases IV and VI. Restriction of conformational

mobility was achieved by introducing tethers of different length and

chemical composition between the C-6 and C-2' hydroxyl of LacNAc. Compound 4 is a 2',6-anhydro derivative which is highly constrained and

can adopt only two unusual conformations at the LacNAc glycosidic linkage.

Compound 5 is modified by a methylene acetal tether and can exist in a

larger range of conformations; however, the ϕ dihedral angle is restricted to values smaller than 30° , which are not entirely similar to minimum energy conformations of LacNAc. The ethylene-tethered

6 can attain conformations in the relatively large energy plateau of

LacNAc that include syn conformations A and B, whereas compound 7, which

is modified by a methylamide tether, can only reside in the B-conformer.

2',6-Dimethoxy derivative 2 was employed to determine the effect of alkylation of the C-6 and C-2' hydroxyls of 5 and 6 whereas 3 was used to reveal the effects of the C-6 amide and C-2' alkylation of 7. The apparent kinetic parameters of transfer to the conformationally constrained 4-7 and reference compounds 1-3 catalyzed by α -2,6- and α -2,3sialyltransferases and α -1,3-fucosyltransferases IV and VI were determined, and the results correlated with their conformational properties. The data for 4-6 showed that each enzyme recognizes N-acetyllactosamine in a low minimum energy conformation. A small change in conformational properties such as in compound 5 resulted in a significant loss of catalytic activity. Larger conformational changes such as in compound 4 abolished all activity of the sialyltransferases whereas the fucosyltransferases showed some activity, albeit very low. The kinetic data for compounds 4 and 5 demonstrate clearly that different glycosyltransferases respond differently to conformational changes, and the fucosyltransferases lost less activity than the sialyltransferases. Correlating apparent kinetic parameters of conformationally constrained 6 and 7 and their reference compounds 2 and 3 further supports the fact that different enzymes respond differently and indicates that sialyltransferases and fucosyltransferases recognize N-acetyllactosamine in a different conformation. Collectively, the data presented here indicate that small conformational changes of an oligosaccharide acceptor induced by, for example, the protein structure can be employed to modulate the patterns of protein glycosylation.

L2 ANSWER 7 OF 39 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN

AN 2003:288055 BIOSIS

DN PREV200300288055

TI Chemoenzymatic synthesis and application of glycopolymers containing

multivalent sialyloligosaccharides with a poly(L-glutamic acid) backbone

for inhibition of infection by influenza viruses.

AU Totani, Kazuhide; Kubota, Takeshi; Kuroda, Takao; Murata, Takeomi; Jwa
Hidari, Kazuya I.-P.; Suzuki, Takashi; Suzuki, Yasuo; Kobayashi, Kazukiyo;
Ashida, Hisashi; Yamamoto, Kenji; Usui, Taichi [Reprint Author]
CS Department of Applied Biological Chemistry, Shizuoka University,
Ohya 836,
Shizuoka, 422-8529, Japan
actusui@agr.shizuoka.ac.jp
SO Glycobiology, (May 2003) Vol. 13, No. 5, pp. 315-326. print.
ISSN: 0959-6658.
DT Article
LA English
ED Entered STN: 19 Jun 2003
Last Updated on STN: 19 Jun 2003
AB Highly water-soluble glycopolymers with poly(alpha-L-glutamic acid) (PGA)
backbones carrying multivalent sialyl oligosaccharides units were
chemoenzymatically synthesized as polymeric inhibitors of
infection by
human influenza viruses. p-Aminophenyl disaccharide glycosides
were
coupled with gamma-carboxyl groups of PGA side chains and
enzymatically
converted to Neu5Acalpha2-3Galbeta1-4GlcNAcbeta-,
Neu5Acalpha2-6Galbeta1-
4GlcNAcbeta-, Neu5Acalpha2-3Galbeta1-3GalNAcalpha-, and
Neu5Acalpha2-3Galbeta1-3GalNAcbeta- units, respectively, by
alpha2,3- or
alpha2,6-sialyltransferases. The glycopolymers synthesized were
used for
neutralization of human influenza A and B virus infection as
assessed by
measurement of the degree of cytopathic inhibitory effect in
virus-infected MDCK cells. Among the glycopolymers tested,
alpha2,6-sialo-PGA with a high molecular weight (260 kDa) most
significantly inhibited infection by an influenza A virus, strain
A/Memphis/1/71 (H3N2), which predominantly binds to alpha2-6
Neu5Ac
residue. The alpha2,6-sialo-PGA also inhibited infection by an
influenza
B virus, B/Lee/40. The binding preference of viruses to
terminal sialic
acids was affected by core determinants of the sugar chain,
Galbeta1-4GlcNAcbeta- or Galbeta1-3GalNAcalpha/beta- units.
Inhibition of
infection by viruses was remarkably enhanced by increasing the
molecular
weight and sialic acid content of glycopolymers.

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AN 2001113364 EMBASE

TI Synthesis of a new transition-state analog of the sialyl donor.
Inhibition
of sialyltransferases.

AU Sun H.; Yang J.; Amaral K.E.; Horenstein B.A.

CS B.A. Horenstein, Department of Chemistry, University of Florida,
Gainesville, FL 32611-7200, United States. horen@chem.ufl.edu

SO Tetrahedron Letters, (26 Mar 2001) Vol. 42, No. 13, pp.
2451-2453. .

Refs: 26

ISSN: 0040-4039 CODEN: TELEAY

PUI S 0040-4039(01)00204-0

CY United Kingdom

DT Journal; Article

FS 037 Drug Literature Index

LA English

SL English

ED Entered STN: 19 Apr 2001
Last Updated on STN: 19 Apr 2001

AB A new class of glycosyltransferase inhibitor has been designed
and
synthesized. The designed inhibitors 3a/3b provide
conformational mimicry
of the transition state in sialyltransfer reactions. The key
synthetic
steps involve a Meinwald rearrangement and a palladium-catalyzed
carbonylation reaction. The results of kinetic studies show
that 3a/3b
exhibit significant inhibition on both 2,3- and
2,6-sialyltransferases.
.COPYRGHT. 2001 Published by Elsevier Science Ltd.

L2 ANSWER 9 OF 39 CAPLUS COPYRIGHT 2006 ACS on STN

AN 2000:368362 CAPLUS

DN 133:103788

TI Ammonium alters N-glycan structures of recombinant TNFR-IgG:
degradative
versus biosynthetic mechanisms

AU Gawlitzek, Martin; Ryll, Thomas; Lofgren, Jim; Sliwkowski, Mary
B.

CS Process Sciences, Genetech Inc., South San Francisco, CA, USA

SO Biotechnology and Bioengineering (2000), 68(6), 637-646
CODEN: BIBIAU; ISSN: 0006-3592

PB John Wiley & Sons, Inc.

DT Journal

LA English

AB The effect of ammonium on the glycosylation pattern of the
recombinant
immunoadhesin tumor necrosis factor-IgG (TNFR-IgG) produced by
Chinese
hamster ovary cells is elucidated in this study. TNFR-IgG is a
chimeric

IgG fusion protein bearing one N-linked glycosylation site in the Fc region and three complex-type N-glycans in the TNF-receptor portion of each monomer. The ammonium concentration of batch suspension cultures was adjusted with glutamine and/or NH₄Cl. The amount of galactose (Gal) and N-acetylneuraminic acid (NANA) residues on TNFR-IgG correlated in a dose-dependent manner with the ammonium concentration under which the N-linked oligosaccharides were synthesized. As ammonium increased from 1 to 15 mM, a concomitant decrease of up to 40% was observed in terminal galactosylation and sialylation of the mol. Cell culture supernatants contained measurable β -galactosidase and sialidase activity, which increased throughout the culture. The β -galactosidase, but not the sialidase, level was proportional to the ammonium concentration. No loss of N-glycans was observed in incubation studies using β -galactosidase and sialidase containing cell culture supernatants, suggesting that the ammonium effect was biosynthetic and not degradative. Several biosynthetic mechanisms were investigated. Ammonium (a weak base) is known to affect the pH of acidic intracellular compartments (e.g., trans-Golgi) as well as intracellular nucleotide sugar pools (increases UDP-N-acetylglucosamine and UDP-N-acetylgalactosamine). Ammonium might also affect the expression rates of β 1,4-galactosyltransferase (β 1,4-GT) and α 2,3-sialyltransferase (α 2,3-ST). To sep. these mechanisms, expts. were designed using chloroquine (changes intracellular pH) and glucosamine (increases UDP-GNac pool [sum of UDP-GlcNAc and UDP-GalNAc]). The ammonium effect on TNFR-IgG oligosaccharide structures could be mimicked only by chloroquine, another weak base. No differences in N-glycosylation were found in the product synthesized in the presence of glucosamine. No differences in β 1,4-galactosyltransferase (β 1,4-GT) and α 2,3-sialyltransferase (α 2,3-ST) mRNA (mRNA) and enzyme levels were observed in cells cultivated in the presence or absence of 13 mM NH₄Cl. PH titration of endogenous CHO α 2,3-ST and β -1,4-GT

revealed a sharp optimum at pH 6.5, the reported trans-Golgi pH. Thus, at pH 7.0 to 7.2, a likely trans-Golgi pH range in the presence of 10 to 15 mM ammonium, activities for both enzymes are reduced to 50% to 60%. Consequently, ammonium seems to alter the carbohydrate biosynthesis of TNFR-IgG by a pH-mediated effect on glycosyltransferase activity.

RE.CNT 42 THERE ARE 42 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L2 ANSWER 10 OF 39 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on
STN
AN 2000:202496 BIOSIS
DN PREV200000202496
TI Trans-sialidase of Trypanosoma cruzi, an alternative to 2,3-sialyltransferase for sialylation of terminal galactose units in oligosaccharides.
AU Crout, David H.G. [Reprint author]; Halberg, Marianne Lilja [Reprint author]; Scigelova, Michaela [Reprint author]; Singh, Suddham [Reprint author]
CS Department of Chemistry, University of Warwick, Gibbet Hill Road, Coventry, CV4 7AL, UK
SO Abstracts of Papers American Chemical Society, (2000) Vol. 219, No. 1-2, pp. CARB 79. print.
Meeting Info.: 219th Meeting of the American Chemical Society.
San Francisco, California, USA. March 26-30, 2000. American Chemical Society.
CODEN: ACSRAL. ISSN: 0065-7727.
DT Conference; (Meeting)
Conference; Abstract; (Meeting Abstract)
LA English
ED Entered STN: 24 May 2000
Last Updated on STN: 5 Jan 2002

L2 ANSWER 11 OF 39 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1999:693792 CAPLUS
DN 132:570
TI Oestrogens regulate pituitary α 2,3-sialyltransferase messenger ribonucleic acid levels in the female rat
AU Damian-Matsumura, P.; Zaga, V.; Maldonado, A.; Sanchez-Hernandez, C.; Timossi, C.; Ulloa-Aguirre, A.
CS Department of Reproductive Biology, Instituto Nacional de la Nutricion

Salvador Zubiran, Mexico, 14000, Mex.

SO Journal of Molecular Endocrinology (1999), 23(2), 153-165
CODEN: JMLEEI; ISSN: 0952-5041

PB Society for Endocrinology

DT Journal

LA English

AB FSH is synthesized by the anterior pituitary gland in multiple mol. forms.

Increased acidic/sialylated FSH charge isoforms are associated with

conditions characterized by a low estrogen output. In the present study,

the authors analyzed the dynamics of the changes in mRNA levels of the

enzyme Gal β 1,3[4]GlcNAc α 2,3-

sialytransferase (2,3-STase) (one of the enzymes that incorporate sialic acid residues into the FSH mol.) in intact and ovariectomized rats.

The anterior pituitaries of 4-day regularly cyclic adult female Wistar

rats were obtained at 1000 h on the days of pro-oestrus (P), oestrus (O),

diestrus 1 (D1) and diestrus 2 (D2), at 0200 h, 1400 h, 1800 h and 2200 h

on D1, at 1800 h on day of O and at 1000 h after 7, 14, 21, 28 and 45 days

of oophorectomy performed on the morning of P. Total RNA was isolated

from each gland and the 2,3-STase levels were measured by Northern blot

hybridization anal. employing a 346-base pair cDNA probe encoding for a

non-conserved amino acid sequence of the catalytic domain of enzyme.

Maximal levels of the enzyme mRNA were detected at 1000 h on D1; thereafter, they progressively decreased by 60% during the ensuing 24 h,

reaching the lowest concentration values (26% of the maximally observed level on D1)

at 1000 h on day of P and remaining unchanged during the morning of O.

Administration of the potent estradiol receptor antagonist ICI 182,780 at

1000 h on D1 completely reverted the time-dependent decrease in 2,3-STase

mRNA levels observed during the afternoon of D1, whereas estradiol benzoate

administered at 1000 h on day of O significantly reduced the enzyme mRNA

levels (to 21% of the levels detected in vehicle-treated controls). In

ovariectomized rats, the α 2,3-STase mRNA progressively increased

from day 21 to day 45 post castration. Administration of estradiol benzoate on day 28 after oophorectomy significantly reduced the 2,3-STase mRNA levels (to 36% of the levels detected in vehicle-injected controls); ICI 182,780 partially counteracted this estradiol-mediated effect. The dynamics of these changes in 2,3-STase mRNA levels partially correlated with changes in the relative abundance of the FSH charge isoforms separated by preparative chromatofocusing of anterior pituitary exts., particularly in glands obtained during the morning of P and O. These data demonstrate for the first time that pituitary 2,3-STase is a hormonally-regulated enzyme and that the changes in transcription and/or stability of its mRNA may be involved, in part, in the post-translational processing of the FSH mol. during certain physiol. conditions.

RE.CNT 60 THERE ARE 60 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L2 ANSWER 12 OF 39 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on
STN
AN 1998:278663 BIOSIS
DN PREV199800278663
TI Differentiation-dependent expression of alpha-2,3-sialyltransferase in rabbit corneal epithelium.
AU Matic, Maja; Petrov, Igor; Stegman, Zeev; Buku, Angeliki; Wolosin, J.
Mario [Reprint author]
CS Dep. Ophthalmol., Mount Sinai Sch. Med., Box 1183, One Gustave L. Levy Place, New York, NY 10029, USA
SO IOVS, (May, 1998) Vol. 39, No. 6, pp. 905-912. print.
DT Article
LA English
ED Entered STN: 24 Jun 1998
Last Updated on STN: 24 Jun 1998
AB PURPOSE. Lectin studies have shown that in the rabbit corneal epithelium, alpha-2,3 sialylation of O-linked glycans differentiates limbal and corneal epithelial cell phenotypes. Because sialic acid can be regulated at the level of the expression of sialyltransferases (STs), the purpose of

the present study was to analyze the expression of alpha-2,3STs in this tissue. METHODS. Reverse transcription-polymerase chain reaction (RT-PCR) was used to generate ST cDNA from total rabbit corneal epithelium RNA using primers selected from the sequences of three previously cloned STs capable of catalyzing the transfer of sialic acid to O-linked oligosaccharides, human placental Galbeta-1,3GalNAc-Galbeta-1,4GluNAcalpha-2,3ST (STZ), and mouse brain Galbeta-1,3GalNAcalpha-2,3ST types I and II (ST3Gal I and ST3Gal II). Tissue distribution of mRNA was assayed by fluorescent in situ hybridization. A synthetic peptide whose sequence was deduced from a cloned cDNA fragment was synthesized and used to prepare an anti-ST goat antiserum. The molecular weights of immunodetectable polypeptides and their distribution in cryostat sections of the limbocorneal area were investigated by western blot analysis and indirect immunofluorescence, respectively. RESULTS. RT-PCR yielded cDNA of expected basepair length for STZ and ST3Gal II. The rabbit STZ cDNA was 86% identical with its human equivalent. Its mRNA was confined to the cornea, mainly in basal epithelial cells, and was not expressed in the limbus. Western blot analysis identified a band at 37 kDa whose binding was abolished by preincubation of the antiserum with the immunization peptide. Immunohistologic analysis revealed the presence of immunoreactive epitopes in all basal cells of the cornea but not in the limbus. CONCLUSIONS. STZ mRNA and the enzyme itself are expressed in the basal layer of the corneal epithelium but are absent in the limbus. This enzyme's de novo expression seems thus responsible for the differential expression of alpha-2,3 sialylation along the limbocorneal differentiation axes. At least one more alpha-2,3ST is also present in the epithelium.

STN
AN 1998:346342 BIOSIS
DN PREV199800346342
TI Structure of an alpha-2,6-sialylated lipooligosaccharide from
Neisseria meningitidis immunotype L1.
AU Wakarchuk, Warren W. [Reprint author]; Gilbert, Michel; Martin,
Adele; Wu,
Yuyang; Brisson, Jean-Robert; Thibault, Pierre; Richards, James
C.
CS Inst. Biol. Sci., Immunochem. Program, Natl. Res. Council
Canada, Room
3157, 100 Sussex Dr., Ottawa, ON K1A 0R6, Canada
SO European Journal of Biochemistry, (June, 1998) Vol. 254, No. 3,
PP. 626-633. print.
CODEN: EJBCAI. ISSN: 0014-2956.
DT Article
LA English
ED Entered STN: 13 Aug 1998
Last Updated on STN: 13 Aug 1998
AB The recent cloning of the lipooligosaccharide (LOS) alpha-2,3-
sialyltransferase from Neisseria meningitidis immunotype L3
permitted us
to examine other immunotypes for this structural gene. We
identified the
gene and measured the enzyme activity in the L1 immunotype
strain which
had previously been reported to lack sialic acid in its LOS
because it
contains a terminal alpha-linked galactose which was thought not
to be an
acceptor for the sialyltransferase. This finding prompted us to
re-examine the structure of the LOS from the L1 immunotype,
which revealed
the presence of sialic acid on the terminal alpha-linked
galactose.
Oligosaccharides derived from the LOS were shown to be
sialylated by
composition and methylation analysis, mass spectrometry and
nuclear
magnetic resonance. The detailed structural analysis showed the
sialic
acid to occur only at O6 of the terminal alpha-D-galactopyranose
residue
of the alpha-D-Gal-1,4-beta-D-Gal-1,4-beta-D-glc trisaccharide
(Pk
epitope) chain of the LOS, in the alpha-D configuration. These
data are
the first report of a alpha-2,6-linked sialic acid in a
bacterial LOS or
lipopolysaccharide, and also the first report of a sialylated Pk
epitope.

L2 ANSWER 14 OF 39 MEDLINE on STN DUPLICATE 2
 AN 1998139888 MEDLINE
 DN PubMed ID: 9473501
 TI Down-regulation of human sialyltransferase gene expression
 during in vitro
 human keratinocyte cell line differentiation.
 AU Taniguchi A; Matsumoto K
 CS Department of Clinical Chemistry, School of Pharmaceutical
 Sciences, Toho
 University, Chiba, Japan.. taniaki@phar.toho-u.ac.jp
 SO Biochemical and biophysical research communications, (1998 Feb
 4) Vol.
 243, No. 1, pp. 177-83.
 Journal code: 0372516. ISSN: 0006-291X.
 CY United States
 DT Journal; Article; (JOURNAL ARTICLE)
 LA English
 FS Priority Journals
 OS GENBANK-AB009393
 EM 199803
 ED Entered STN: 19980326
 Last Updated on STN: 19980326
 Entered Medline: 19980316
 AB Sialic acids play important roles in biological processes, such
 as
 cell-cell communication and cell-matrix interaction.
 Histochemical
 analysis using PNA and LFA lectin has shown that the expression
 of alpha
 2,3-sialic acid linked to Gal beta 1,3GalNAc is high in basal
 cells and
 decreases following further keratinocyte differentiation. In
 the present
 study, we used an in vitro keratinocyte cell line
 differentiation model to
 study expression of alpha 2,3-sialic acid linked to Gal beta 1,3
 GalNAc.
 Treatment of the human papillomavirus type 16-immortalized human
 keratinocyte (PHK16) cell line with high concentrations (1.0 mM)
 of Ca²⁺
 resulted in PHK16 cell differentiation and redistribution of PNA
 binding
 glycoproteins. The synthesis of alpha 2,3-sialic acid linked to
 Gal beta
 1,3GalNAc is mediated by three beta-galactoside alpha 2,
 3-sialyltransferases, which are the gene products of
 hST30, hST30/N and hST3 Gal II. Ca²⁺ treatment of PHK16 cells
 decreased
 the mRNA expression of hST30/N, whereas the mRNA of hST30 and
 hST3Gal II
 was not detected by Northern blot analysis, suggesting that the
 hST30/N

gene is responsible for sialic acid down regulation during keratinocyte differentiation. In order to examine transcriptional regulation of the hST30/N gene, we first determined the transcriptional starting sites of the hST30/N gene in PHK 16 using 5'-RACE analysis. Two kinds of type B isoforms, types B3 and BX, were identified. Type BX is a novel isoform related to the type B form, but which differs upstream of the B3 exon. The results of Northern blot analysis using a type BX-specific probe suggest that the B3 promoter may be regulated by Ca²⁺. Using a luciferase assay, we identified a functional DNA portion within hST30/N genomic DNA that confers negative transcriptional regulation on the hST30/N B3 promoter during Ca²⁺ stimulated human keratinocyte differentiation. This element contains some putative transcriptional factor binding sequence motifs such as AP2.

L2 ANSWER 15 OF 39 EMBASE COPYRIGHT (c) 2006 Elsevier B.V. All rights

reserved on STN

AN 1999021378 EMBASE

TI Glycan engineering of proteins with whole living yeast cells expressing

rat liver α 2,3-sialyltransferase in the porous cell wall.

AU Sievi E.; Helin J.; Heikinheimo R.; Makarow M.

CS M. Makarow, Institute of Biotechnology, University of Helsinki, P.O. Box

56, 00014 Helsinki, Finland. marja.makarow@helsinki.fi

SO FEBS Letters, (1998) Vol. 441, No. 2, pp. 177-180. .

Refs: 29

ISSN: 0014-5793 CODEN: FEBLAL

PUI S 0014-5793(98)01550-6

CY Netherlands

DT Journal; Article

FS 029 Clinical Biochemistry

004 Microbiology

037 Drug Literature Index

LA English

SL English

ED Entered STN: 4 Feb 1999

Last Updated on STN: 4 Feb 1999

AB The N-glycans of recombinant proteins produced via the secretory pathway

of cultured mammalian cells are often undersialylated, and insect cells

lack sialyltransferases. Undersialylated glycoproteins are rapidly cleared

from the circulation, compromising the effect of pharmaceuticals. We show

that incubation with living *Saccharomyces cerevisiae* cells expressing the

catalytic ectodomain of rat liver α 2,3-sialyltransferase (ST3N(e))

in the porous cell wall resulted in sialylation of glycoproteins. The

K(m) values of the yeast enzyme for several substrates were similar to

those of recombinant ST3N(e) from insect cells and of authentic ST3N. The

yeast strain provides an inexpensive self-perpetuating source of ST3N

activity for glycan engineering of recombinant proteins.

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L2 ANSWER 16 OF 39 MEDLINE on STN

AN 1998003935 MEDLINE

DN PubMed ID: 9343936

TI Cloning and expression of SAT-3 involved in SA-Le(x) biosynthesis:

inhibition studies with polyclonal antibody against GST-SAT-3 fusion

protein.

AU Basu S S; Basu M; Dastgheib S; Ghosh S; Basu S

CS Department of Chemistry and Biochemistry, University of Notre Dame, IN

46556, USA.

NC NS-18005 (NINDS)

SO Indian journal of biochemistry & biophysics, (1997 Feb-Apr) Vol. 34, No.

1-2, pp. 97-104.

Journal code: 0310774. ISSN: 0301-1208.

CY India

DT Journal; Article; (JOURNAL ARTICLE)

LA English

FS Priority Journals

EM 199712

ED Entered STN: 19980109

Last Updated on STN: 19980109

Entered Medline: 19971223

AB The SAT-3 activity (CMP-NeuAc:Gal beta 1-4GlcNAc beta 1-3 Gal beta

1-4Glc-ceramide alpha 2-3 **sialyltransferase**)

involved in the biosynthesis of sialy Le(x) has been characterized in

human colon carcinoma cells and embryonic chicken brains. Using RT-PCR-based strategy, we have isolated partial cDNA clones of SAT-3 from ECB and Colo-205 mRNAs. Suitable primers from sialylmotif and N-terminal sequence of human placenta SAT-3 (HP-SAT-3) were used. The 800 bp cDNA fragment encoding a region (90%) of alpha 2-3 sialyltransferase (SAT-3) catalytic domain from ECB has been expressed as a glutathione S-transferase (GST) soluble fusion protein (62 kDa) in E. coli and purified over glutathione-agarose affinity matrix. Polyclonal antibody has been produced against affinity-purified catalytic domain of SAT-3 (GST-SAT-3 fusion protein). A concentration-dependent polyclonal antibody binding to native SAT-3 has also been demonstrated by measuring the residual SAT-3 activity in the enzyme fractions from Colo-205. The marked inhibition (> 80%) of SAT-3 activity and relatively less inhibition (< 20%) of SAT-4 activity (CMP-NeuAc:GgOse4Cer alpha 2-3sialyl transferase) suggests strongly the existence of two different gene products (SAT-3 and SAT-4) in human colon carcinoma Colo-205 cells and in embryonic chicken brains (ECB).

L2 ANSWER 17 OF 39 MEDLINE on STN
 AN 97079181 MEDLINE
 DN PubMed ID: 8920913
 TI Molecular cloning and expression of human Gal beta 1,3GalNAc alpha 2,3-sialyltransferase (hST3Gal II).
 AU Kim Y J; Kim K S; Kim S H; Kim C H; Ko J H; Choe I S; Tsuji S; Lee Y C
 CS Division of Molecular Glycobiology, Korea Research Institute of Bioscience and Biotechnology, (KRIBB), Taejeon, South Korea.
 SO Biochemical and biophysical research communications, (1996 Nov 12) Vol. 228, No. 2, pp. 324-7.
 Journal code: 0372516. ISSN: 0006-291X.
 CY United States
 DT Journal; Article; (JOURNAL ARTICLE)
 LA English
 FS Priority Journals
 OS GENBANK-U63090

EM 199612
 ED Entered STN: 19970128
 Last Updated on STN: 19980206
 Entered Medline: 19961230
 AB A cDNA of human Gal beta 1,3GalNAc alpha 2,3-
sialyltransferase (hST3Gal II) which has been known to exhibit
 much more acceptor substrate preference for glycolipid than for
 O-linked oligosaccharides of glycoproteins, was isolated from the human
 liver cDNA library by plaque hybridization using the cDNA of mouse ST3Gal
 II (mST3Gal II) cloned previously as a probe. Comparative analysis of this
 cDNA with mST3Gal II indicates 89 and 94% homologies in the nucleotide and
 amino acid levels, respectively, between the two sequences in the
 predicted coding region. Northern analysis indicated that the expression
 of hST3Gal II mRNA is tissue-specific, it being prominent in skeletal
 muscle and heart, while that in lung and kidney is very low. This enzyme
 expressed in COS cells showed a similar activity with that of mST3Gal II.

L2 ANSWER 18 OF 39 MEDLINE on STN
 AN 96230359 MEDLINE
 DN PubMed ID: 8785491
 TI Study of O-sialylation of glycoproteins in C6 glioma cells
 treated with retinoic acid.
 AU Reboul P; George P; Miquel D; Louisot P; Broquet P
 CS Laboratoire de Biochimie Genale et Medicale, INSERM-CNRS U.189,
 Faculte de Medecine Lyon-Sud, Oullins, France.
 SO Glycoconjugate journal, (1996 Feb) Vol. 13, No. 1, pp. 69-79.
 Journal code: 8603310. ISSN: 0282-0080.
 CY ENGLAND: United Kingdom
 DT Journal; Article; (JOURNAL ARTICLE)
 LA English
 FS Priority Journals
 EM 199609
 ED Entered STN: 19961008
 Last Updated on STN: 19980206
 Entered Medline: 19960920
 AB When treated with retinoic acid in vivo, C6 glioma cells show an
 enhancement of CMP-Neu5Ac:Gal beta 1-3 GalNAc-R alpha-2,3
 sialyltransferase activity. A 300 kDa glycoprotein was detected
 by lectin affino blotting in retinoic acid-treated C6 cells which stained
 weakly or

not at all in control cells. Comparative studies with different lectins

demonstrated that this glycoprotein contains alpha 2,3 Neu5Ac Gal-GalNAc

O-glycan moieties. Cultures in the presence of an inhibitor of O-glycan

synthesis (N-acetylgalactosaminide alpha-O-benzyl) demonstrated that

enhancement of staining of the 300 kDa glycoprotein was not due to the

increase of the alpha 2,3 **sialyltransferase**

but to the de novo synthesis of the polypeptide chain of this glycoprotein.

L2 ANSWER 19 OF 39 MEDLINE on STN

AN 95352618 MEDLINE

DN PubMed ID: 7626605

TI Interleukin-3-associated expression of gangliosides in mouse myelogenous

leukemia NFS60 cells introduced with interleukin-3 gene: expression of

ganglioside GD1a and key involvement of CMP-NeuAc:lactosylceramide alpha

2-->3-sialyltransferase in GD1a expression.

AU Tsunoda A; Nakamura M; Kirito K; Hara K; Saito M

CS Division of Hemopoiesis, Institute of Hematology, Jichi Medical School, Tochigi, Japan.

SO Biochemistry, (1995 Jul 25) Vol. 34, No. 29, pp. 9356-67. Journal code: 0370623. ISSN: 0006-2960.

CY United States

DT Journal; Article; (JOURNAL ARTICLE)

LA English

FS Priority Journals

EM 199509

ED Entered STN: 19950921

Last Updated on STN: 19980206

Entered Medline: 19950907

AB Murine interleukin-3 (IL-3)-associated expression of gangliosides has been

investigated using a gene transfection technique. A murine IL-3 cDNA was

introduced into the parental NFS60-17 cells that was exclusively dependent

on IL-3. We analyzed the glycosphingolipids from the parental cells and

the transfected cells by fast atom bombardment mass spectrometry analyses

and/or immunostaining techniques using specific antibodies. Two major

gangliosides, IV3NeuAc-GgOse4Cer (GM1b) and IV3-NeuAc,III6NeuAc-GgOse4Cer

(GD1 alpha), were expressed, in the parental cells. By contrast, in the IL-3 gene-transfected cells, a ganglioside IV3NeuAc,II3NeuAc-GgOse4Cer (GD1a) was strikingly expressed, in addition to GM1b and GD1 alpha that were already present in the parental cells. In spite of various IL-3-secreting capabilities, all transfectants investigated have exhibited the same ganglioside patterns and expressed GD1a. Furthermore, the appearance of GD1a was a consequence of the up-regulation of a single glycosyltransferase, CMP-NeuAc:lactosylceramide alpha 2--> 3-sialyltransferase (GM3 synthase). Activities of the other downstream glycosyltransferases that were involved in GD1a synthesis were not significantly different between the parental and the transfected cells. According to these data, the progression of tumor stage by the acquisition of autonomous cell growth ability after IL-3 gene transfection resulted in dramatic changes in cell surface gangliosides and their biosynthetic pathways. GD1a could be considered as an IL-3-associated ganglioside and was expressed in a tight connection with a single glycosyltransferase (GM3 synthase) up-regulation and with IL-3 expression in murine myelogenous leukemia cells.

L2 ANSWER 20 OF 39 MEDLINE on STN DUPLICATE 3
 AN 96006256 MEDLINE
 DN PubMed ID: 7558722
 TI Alpha-2,3 sialylation differentiate the limbal and corneal epithelial cell phenotypes.
 AU Wolosin J M; Wang Y
 CS Department of Ophthalmology, Mount Sinai Medical Center, New York, NY 10026-6574, USA.
 NC EYO1867 (NEI)
 EYO7773 (NEI)
 SO Investigative ophthalmology & visual science, (1995 Oct) Vol. 36, No. 11, pp. 2277-86.
 Journal code: 7703701. ISSN: 0146-0404.
 CY United States
 DT Journal; Article; (JOURNAL ARTICLE)
 LA English
 FS Priority Journals

EM 199511
ED Entered STN: 19951227
Last Updated on STN: 20021218
Entered Medline: 19951106
AB PURPOSE. The initial differentiation event for the corneal epithelial cell lineage occurs as the limbally localized stem cells yield, through mitosis, the highly proliferative, transiently amplifying corneal peripheral cells. This differentiation is characterized by the expression of tissue-specific cytokeratins, as well as the loss of alpha-enolase and pigmentation. All these are intracellular events. The aim of this study was to identify and characterize, through lectin analysis, changes in cell surface properties associated with differentiation. METHODS. Cryostat sections of the limbo-corneal area from freshly dissected pigmented rabbit corneas were stained with fluorescent lectins. RESULTS. Peanut lectin (PNA; binds to Ser/Threo-GalNAc-beta-1,3-Gal, if the Gal residue is not sialylated) stained the plasma membrane of all layers of the conjunctiva and limbus but was excluded from corneal cell membranes. Maackia amurensis agglutinin (MAA; binds to sialic acid attached to galactose through alpha-2,3 bonds in either N-glycans or O-glycans) stained exclusively corneal cell plasma membrane. After complete tissue desialylation, all corneal plasma membranes became PNA positive with equal stain intensity across both sides of the limbo-corneal margin. The binding of the agglutinins from Limax flavus (binds unselectively to sialic acid) and Sambucus nigra (binds to sialic acid attached through alpha-2,6 bonds) to the basement membrane displayed a large increase at the corneal side of limbo-corneal demarcation. CONCLUSIONS. Limbal (stem) cells express on the cell surface unsialylated galactose residues that are recognized by PNA and that lack any sialic acid bound through alpha-2,3 bonds. The initial differentiation involves sialylation of these residues and the

concurrent appearance of alpha-2,3 sialic acid residues, suggesting expression or activation of alpha-2-3 **sialyltransferase**. Changes in basement membrane composition, charge, or both may underpin this expression.

L2 ANSWER 21 OF 39 CAPLUS COPYRIGHT 2006 ACS on STN

AN 1995:664480 CAPLUS

DN 123:106149

TI Relationship of membrane phospholipid composition, lactosylceramide

molecular species, and the specificity of CMP-N-acetylneuraminate:lactosylceramide α 2,3-sialyltransferase to the molecular species composition of GM3 ganglioside

AU Kadowaki, Hiroko; Grant, Marianne A.

CS Dep. Med., Boston Univ. Sch. Med., Boston, MA, 02118, USA

SO Journal of Lipid Research (1995), 36(6), 1274-82

CODEN: JLPRAW; ISSN: 0022-2275

PB Lipid Research, Inc.

DT Journal

LA English

AB The ceramide mol. species specificity of rat brain neuron lactosylceramide

α 2,3-**sialyltransferase** (I) was determined

using 19 mol. species of lactosylceramide incorporated into liposomes

prepared with purified rat brain phospholipids. Neuronal I displayed a

distinct mol. species specificity (which was different than the specificity of liver I) based on both the long-chain base and the fatty

acid composition of the lactosylceramide. Specifically, compared to liver I,

relatively high activities were obtained with d18:1-16:0, d18:1-22:1, and

d18:0-18:0 lactosylceramide mol. species. When the lipid composition of the

neuronal microsomal membranes was altered to resemble that of rat liver

Golgi membrane lipids, the activities toward d18:1-16:0, d18:1-22:1, and

d18:0-18:0 lactosylceramide mol. species were significantly (P<0.01)

reduced and the mol. species specificity of neuronal I resembled that of

liver I. In the reciprocal experiment in which the lipid composition of the rat

liver Golgi membranes was altered to resemble neuronal microsomal membrane

lipids, the mol. species specificity of liver I was virtually identical to

the specificity obtained with the native neuronal enzyme. Anal. of the

mol. species composition of lactosylceramide and ganglioside GM3 in rat liver

Golgi membranes revealed that the mol. species composition of rat liver Golgi

membrane GM3 was precisely what would be expected based on the mol.

species specificity of I and the mol. species composition of lactosylceramide

in the Golgi membrane. Based on these results, it was concluded that the

mol. species specificity of I determined in the in vitro assay accurately

reflected the specificity of I in vivo and that the specificity of I is

determined by the phospholipid mol. species composition of the Golgi membrane.

L2 ANSWER 22 OF 39 MEDLINE on STN

AN 95110864 MEDLINE

DN PubMed ID: 7811747

TI Sequential changes in glycolipid expression during human B cell differentiation: enzymatic bases.

AU Taga S; Tetaud C; Mangeney M; Tursz T; Wiels J

CS Laboratoire de Biologie des Tumeurs Humaines, CNRS URA 1156, Institut G.

Roussy, Villejuif, France.

SO Biochimica et biophysica acta, (1995 Jan 3) Vol. 1254, No. 1, pp. 56-65.

Journal code: 0217513. ISSN: 0006-3002.

CY Netherlands

DT Journal; Article; (JOURNAL ARTICLE)

LA English

FS Priority Journals

EM 199502

ED Entered STN: 19950217

Last Updated on STN: 19980206

Entered Medline: 19950209

AB We have previously reported that human B cell differentiation is accompanied by sequential changes in glycosphingolipid expression. Pre-B

cells contain lacto-series type II chain-based glycolipids and GM3

ganglioside; mature/activated B cells do not synthesize lacto-series

compounds but express GM3 and globo-series glycolipids (Gb3 and Gb4);

terminally differentiated B cells, in addition to these compounds, also

contain GM2 ganglioside. At the cell surface, Gb3, Gb4 and GM2 constitute

stage-specific antigens. To elucidate the biosynthetic mechanism leading

to these modifications we have compared activities of the glycosyltransferases involved in the core structure assembly and the first

elongation steps of neo-lacto, ganglio- and globo-series glycolipids.

These glycosyltransferase activities have been measured in B cell lines

and normal B lymphocytes at various stages of differentiation. We first

determined the optimal requirements of the four glycosyltransferases which

synthesize Lc3, GM3, Gb4 and GM2 glycolipids in B lymphocytes and then

tested these enzymes and the Gb3 synthetase in the selected B cells. The

following results were obtained: beta 1-->3 N-Acetylglucosaminyltransferase (Lc3 synthetase) has a high activity in pro-

and pre-B cells whereas it is undetectable in more differentiated cells;

alpha 2-->3 **sialyltransferase** (GM3 synthetase) is activated from the pre-B cell stage to the terminally

differentiated myeloma cells; alpha 1-->4 galactosyltransferase (Gb3

synthetase) is only detected in cells representing the late stages of B

cell differentiation; beta 1-->3 N-Acetylgalactosaminyltransferase (Gb4

synthetase) is only found in some lymphoblastoid cell lines, representative of activated B cells whereas the beta 1-->4

N-Acetylgalactosaminyltransferase (GM2 synthetase) has a high activity in

these lymphoblastoid cell lines and in terminally differentiated myeloma

cells. These results suggest that the sequential shifts in the three

major glycosphingolipid series observed during B cell differentiation are

mostly due to sequential activations of the corresponding glycosyltransferases.

L2 ANSWER 23 OF 39 MEDLINE on STN

AN 94235644 MEDLINE

DN PubMed ID: 8180204

TI Kinetic properties and acceptor substrate preferences of two kinds of Gal

beta 1,3GalNAc alpha 2,3-sialyltransferase from mouse brain.

AU Kojima N; Lee Y C; Hamamoto T; Kurosawa N; Tsuji S

CS Frontier Research Program, Institute of Physical and Chemical Research

(RIKEN), Saitama, Japan.

SO Biochemistry, (1994 May 17) Vol. 33, No. 19, pp. 5772-6.
 Journal code: 0370623. ISSN: 0006-2960.
 CY United States
 DT Journal; Article; (JOURNAL ARTICLE)
 LA English
 FS Priority Journals
 EM 199406
 ED Entered STN: 19940621
 Last Updated on STN: 19980206
 Entered Medline: 19940616
 AB The cDNAs encoding two kinds of Gal beta 1,3GalNAc alpha 2,
3-sialyltransferases (ST3GalA.1 and ST3GalA.2) have been
 cloned from mouse brain, both of which could synthesize the
 NeuAc alpha
 2,3Gal beta 1,-3GalNAc sequence of gangliosides as well as
 O-glycosidically linked oligosaccharides of glycoproteins [Lee
 et al.
 (1993) Eur. J. Biochem. 216, 377-385; Lee et al. (1994) J.
 Biol. Chemical
 (in press)]. Kinetic analysis of the two sialyltransferases
 using Gal
 beta 1,3GalNAc, asialoGM1, or asialofetuin revealed that
 ST3GalA.1
 exhibits the highest Km value for asialoGM1 (Km = 1.25 mM) and
 the lowest
 one for asialofetuin (Km = 0.10 mM), whereas the Km values of
 ST3GalA.2
 for the substrates are very similar (Km approximately 0.5 mM).
 The
 synthesis of GM1b from asialoGM1 by ST3GalA.1 was clearly
 inhibited in the
 presence of Gal beta 1,3GalNAc or asialofetuin, but that by
 ST3GalA.2 was
 not at all. On the other hand, the activity of ST3GalA.2 toward
 Gal beta
 1,3GalNAc or asialofetuin was inhibited by asialoGM1 or GM1.
 The results
 of acceptor competition experiments involving asialoGM1, Gal beta
 1,3GalNAc, and asialofetuin indicated that ST3GalA.2 exhibits
 noncompetitive inhibition between asialoGM1 and Gal beta
 1,3GalNAc or
 between asialoGM1 and asialofetuin, whereas ST3GalA.1 exhibits
 competitive
 inhibition between all kinds of acceptors. These results
 strongly
 indicate that acceptor preference of ST3GalA.1 is different from
 that of
 ST3GalA.2, although their acceptor substrate specificities are
 the same;
 i.e., gangliosides serve as predominant acceptors for the latter
 over
 O-glycosidically linked oligosaccharides of glycoproteins, which
 are much

better acceptors for the former.

L2 ANSWER 24 OF 39 CAPLUS COPYRIGHT 2006 ACS on STN

AN 1993:407122 CAPLUS

DN 119:7122

TI Regulation of α 2,3-sialyltransferase expression correlates with conversion of peanut agglutinin (PNA)+ to PNA- phenotype in developing thymocytes

AU Gillespie, William; Paulson, James C.; Kelm, Sorge; Pang, Mabel; Baum, Linda G.

CS Sch. Med., UCLA, Los Angeles, CA, 90024, USA

SO Journal of Biological Chemistry (1993), 268(6), 3801-4
CODEN: JBCHA3; ISSN: 0021-9258

DT Journal

LA English

AB Staining of thymus tissue with the plant lectin peanut agglutinin (PNA) is

a classic technique for defining the cortical (PNA+) and medullary (PNA-)

regions of this tissue. These two regions are primarily composed of

immature and mature thymocytes, resp. Conversion of the PNA+ to the PNA-

phenotype has been attributed to masking of the cell surface carbohydrate

receptors of PNA by sialic acid during the intrathymic maturation of these

cells. Here, evidence is presented that the regulated expression of a

single glycosyltransferase, a Gal β 1,3GalNAc α 2, **3-sialyltransferase**, can account for this glycosylation change. This enzyme sialylates the preferred ligand of PNA, Gal β 1,3GalNAc, forming the sequence NeuAc α 2,3Gal β 1,3GalNAc, thus masking PNA binding sites. Expression of the enzyme is inversely

proportional to expression of the PNA receptor, as evidenced by anal. of

T-lymphoblastoid cell lines and by in situ hybridization expts. in human

thymic tissue.

L2 ANSWER 25 OF 39 CAPLUS COPYRIGHT 2006 ACS on STN

AN 1994:72123 CAPLUS

DN 120:72123

TI Effect of membrane lipids on the lactosylceramide molecular species

specificity of CMP-N-acetylneuraminate:lactosylceramide sialyltransferase

AU Kadowaki, Hiroko; Grant, Marianne A.; Williams, Lori A.

CS Sch. Med., Boston Univ., Boston, MA, 02118, USA

SO Journal of Lipid Research (1993), 34(6), 905-14

CODEN: JLPRAW; ISSN: 0022-2275

DT Journal

LA English

AB It has previously been shown that when the mol. species specificity of rat

liver Golgi CMP-N-acetylneuraminate:lactosylceramide α 2,

3-sialyltransferase was determined, using as the substrate

lactosylceramide (LacCer) incorporated into liposomes prepared

with rat

liver Golgi lipids, the enzyme showed a pronounced variation in

activity

towards the various mol. species of LacCer. In this paper, the

LacCer

mol. species specificity of sialyltransferase from neuroblastoma

NB2a

cells was examined using five naturally occurring and three

synthetic mol.

species of LacCer. The enzyme activity was determined by

following the

formation of [14C]GM3 from GMP [14C]neuraminic acid and

individual mol.

species of LacCer incorporated into liposomes. Nonspecific

lipid transfer

protein was included in the enzyme assay to facilitate the

transfer of

LacCer and other lipids between the liposomes and the membrane

where

sialyltransferase is located. In these enzyme assays the

liposomes

contained approx. 10 times more lipid phosphorus than either the

microsomal fraction of NB2a cells or the Golgi fraction of rat

liver.

Thus, in the presence of nonspecific lipid transfer protein, the

lipid

composition to the membrane where sialyltransferase is located

was modified to

resemble the lipid composition of the liposomes. When the mol.

species

specificity of NB2a cell sialyltransferase was determined with

LacCer

incorporated into liposomes prepared with NB2a cell lipids, the

enzyme

showed no specificity towards the various mol. species of LacCer.

However, when the mol. species specificity of NB2a cell

sialyltransferase

was determined with LacCer incorporated into liposomes prepared

with rat liver

Golgi lipids, the enzyme showed a variation in activity towards

the

various LacCer mol. species similar to that observed with the

liver Golgi

enzyme using liposomes prepared with liver Golgi lipids.
Likewise, when the
mol. species specificity of rat liver Golgi sialyltransferase
was determined
with LacCer incorporated into liposomes prepared with NB2a cell
lipids, the
liver enzyme then showed no specificity towards the various mol.
species
of LacCer.

L2 ANSWER 26 OF 39 MEDLINE on STN
AN 93338720 MEDLINE
DN PubMed ID: 8101768
TI Use of the "core-2"-N-acetylglucosaminyltransferase in the
chemical-enzymatic synthesis of a sialyl-LeX-containing
hexasaccharide
found on O-linked glycoproteins.
AU Oehrlein R; Hindsgaul O; Palcic M M
CS Department of Chemistry, University of Alberta, Edmonton,
Canada.
SO Carbohydrate research, (1993 May 21) Vol. 244, No. 1, pp.
149-59.
Journal code: 0043535. ISSN: 0008-6215.
CY Netherlands
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 199308
ED Entered STN: 19930917
Last Updated on STN: 19980206
Entered Medline: 19930831
AB A simple preparation of the "core-II"
N-acetylglucosaminyltransferase
(UDP-D-GlcpNAc:beta-D-Galp-(1-->3)-alpha-D-GalpNAc (GlcNAc to
GalNAc)
beta-(1-->6)-GlcNAc-transferase, GlcNAcT, EC 2.4.1.102) from
commercial
mouse kidney acetone powder is reported. The enzyme obtained in
a single
step of affinity chromatography is suitable for use in
preparative
oligosaccharide synthesis. In conjunction with previously
described
preparations of beta-(1-->4)-galactosyltransferase (EC
2.4.1.22), alpha-(
2-->3)-**sialyltransferase** (EC 2.4.99.6) and
alpha-(1-->3/4)-fucosyltransferase (EC 2.4.1.65), the GlcNAcT
was used in
the first step of a sequence which converted the disaccharide
beta-D-Galp-(1-->3)-alpha-D-GalpNAc-OR into the
sialyl-LeX-containing
structure alpha-D-NeupAc-(2-->3)-beta-D-Galp-
(1-->4)-[alpha-L-Fucp-(1--

>3)]-beta-D-GlcpNAc-(1-->6)-[beta-D-Galp -
 (1-->3)]-alpha-D-GalpNAc-OR
 (5), where R = (CH₂)₈CO₂Me. Hexasaccharide 5, thus assembled in
 only one
 week once the enzymes were prepared, was characterized by ¹H and
¹³C NMR
 spectroscopy and fast-atom bombardment mass spectrometry, as
 were all
 intermediate oligosaccharides. The core II GlcNAcT thus joins
 the
 expanding repertoire of readily available reagents for the rapid
 assembly
 of oligosaccharides.

L2 ANSWER 27 OF 39 CABA COPYRIGHT 2006 CABI on STN

AN 93:22551 CABA

DN 19932279470

TI Identification of N-acetylneuraminy1 [alpha]2>3

poly-N-acetyllactosamine

glycans as the receptors of sialic acid-binding Streptococcus
 suis strains

AU Liukkonen, J.; Haataja, S.; Tikkanen, K.; Kelm, S.; Finne, J.

CS Department of Biochemistry and Biotechnology, University of
 Kuopio,

SF-70211 Kuopio, Finland.

SO Journal of Biological Chemistry, (1992) Vol. 267, No. 29, pp.
 21105-21111.

50 ref.

ISSN: 0021-9258

DT Journal

LA English

ED Entered STN: 1 Nov 1994

Last Updated on STN: 1 Nov 1994

AB S. suis is a common cause of sepsis, meningitis, and other
 serious

infections in young piglets and also causes meningitis in
 humans. The

cell-binding specificity of 2 sialic acid-recognizing strains of
 S. suis

was investigated. Treatment of human erythrocytes with sialidase
 or mild

periodate abolished haemagglutination. Haemagglutination
 inhibition

experiments with sialyl oligosaccharides indicated that the
 adhesin

preferred the sequence NeuNAc[alpha]2-3Gal[beta]1-4Glc(NAc).

Resialylation

of desialylated erythrocytes with Gal[beta]1-3(4)GlcNAc [alpha]2
 -3-sialyltransferase induced a strong

haemagglutination, whereas no or only weak haemagglutination was
 obtained

with cells resialylated with 2 other sialyltransferases. Binding
 of

radiolabelled bacteria to blots of erythrocyte membrane proteins revealed binding to the poly-N-acetyllactosamine-containing components Band 3, Band 4.5, and polyglycosyl ceramides and to glycophorin A. The involvement of glycophorin A as a major ligand was excluded by the strong haemagglutination of trypsin-treated erythrocytes and En(a-) erythrocytes defective in glycophorin A. Sensitivity of the haemagglutination toward endo-[beta]-galactosidase treatment of erythrocytes and inhibition by purified poly-n-acetyllactosaminyl glycopeptides indicated that the adhesin bound to glycans containing the following structure: NeuNAc[alpha]2-3Gal[beta]1-4GlcNAc[beta]1-3Gal[beta]1-.

L2 ANSWER 28 OF 39 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN

AN 1993:142790 BIOSIS

DN PREV199395075590

TI Biosynthesis of sulfated glycoprotein-N-glycans present in recombinant

human tissue plasminogen activator.

AU Pfeiffer, Guenter [Reprint author]; Strube, Karl-Hermann; Geyer, Rudolf

[Reprint author]

CS Inst. Biochemistry, Univ. Giessen, Friedrichstrasse 24, D-6300 Giessen,

Germany

SO Biochemical and Biophysical Research Communications, (1992) Vol. 189, No.

3, pp. 1681-1685.

CODEN: BBRCA9. ISSN: 0006-291X.

DT Article

LA English

ED Entered STN: 16 Mar 1993

Last Updated on STN: 16 Mar 1993

AB Recombinant human tissue plasminogen activator expressed in murine

epithelial cells carries, in part, sulfated N-glycans, which are characterized by the presence of a NeuAc-alpha-3(SO-4-6)Gal units. In

order to study the biosynthesis of this novel structural element, corresponding sulfated asialooligosaccharide alditols were resialylated in

vitro using a crude sialytransferase preparation from murine liver which

was shown to contain Gal-beta-1, 3(4)GlcNAc alpha-2,3-

sialytransferase activity. Products were analyzed for transfer of

sialic acid residues by anion-exchange HPLC. The results demonstrated that resialylation of SO-4-6Gal-residues did no occur. Therefore, it may be concluded that transfer of the sulfate group is the final step in the biosynthesis of this structural epitope.

L2 ANSWER 29 OF 39 MEDLINE on STN
AN 91337094 MEDLINE
DN PubMed ID: 1872858
TI Study of O-glycan sialylation in C6 cultured glioma cells: evidence for post-translational regulation of a beta-galactoside alpha 2,3 sialyltransferase activity by N-glycosylation.
AU Broquet P; George P; Geoffroy J; Reboul P; Louisot P
CS Laboratoire de Biochimie Generale et Medicale, INSERM-CNRS U.189 Faculte de Medecine Lyon-Sud, Oullins, France.
SO Biochemical and biophysical research communications, (1991 Aug 15) Vol. 178, No. 3, pp. 1437-43.
Journal code: 0372516. ISSN: 0006-291X.
CY United States
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 199109
ED Entered STN: 19911006
Last Updated on STN: 19980206
Entered Medline: 19910918
AB We have studied the Gal beta 1-3GalNAc-R alpha 2,3 sialyltransferase from C6 glioma cells transferring Neu5Ac from CMP-Neu5Ac onto O-glycans of glycoproteins. Using synchronized C6 glioma cells, we showed that the alpha 2,3 sialyltransferase activity was inhibited by tunicamycin to a greater extend than DNA and protein biosynthesis suggesting inhibition of N-glycosylation of this enzyme. Additional demonstration of N-glycosylation of the alpha 2,3 **sialyltransferase** was provided through ConA-Sepharose binding. Treatment of partially purified alpha 2,3 **sialyltransferase** by peptide-N-glycosidase F showed a significative inhibition demonstrating that N-glycan moiety is required for complete activity of the C6 glioma cell alpha 2,3 sialyltransferase.

L2 ANSWER 30 OF 39 MEDLINE on STN DUPLICATE 4

AN 91145865 MEDLINE
 DN PubMed ID: 1997166
 TI Biosynthesis of O-glycans in leukocytes from normal donors and from patients with leukemia: increase in O-glycan core 2
 UDP-GlcNAc:Gal beta 3 GalNAc alpha-R (GlcNAc to GalNAc) beta(1-6)-N-acetylglucosaminyltransferase in leukemic cells.
 AU Brockhausen I; Kuhns W; Schachter H; Matta K L; Sutherland D R; Baker M A
 CS Research Institute, Hospital for Sick Children, Toronto, Ontario, Canada.
 SO Cancer research, (1991 Feb 15) Vol. 51, No. 4, pp. 1257-63. Journal code: 2984705R. ISSN: 0008-5472.
 CY United States
 DT Journal; Article; (JOURNAL ARTICLE)
 LA English
 FS Priority Journals
 EM 199104
 ED Entered STN: 19910419
 Last Updated on STN: 19910419
 Entered Medline: 19910402
 AB We have studied the biosynthesis of altered O-glycan structures on leukocytes from patients with chronic myelogenous leukemia and with acute myeloblastic leukemia (AML). It has been shown previously that the activity of CMP-NeuAc:Gal beta 1-3GalNAc alpha-R (sialic acid to galactose) alpha(2-3)-**sialyltransferase** (EC 2.4.99.4) is increased in leukocytes from patients with chronic myelogenous leukemia (M. A. Baker, A. Kanani, I. Brockhausen, H. Schachter, A. Hindenburg, and R. N. Taub, Cancer Res., 47: 2763-2766, 1987) and with AML (A. Kanani, D. R. Sutherland, E. Fibach, K. L. Matta, A. Hindenburg, I. Brockhausen, W. Kuhns, R. N. Taub, D. van den Eijnden and M. A. Baker, Cancer Res., 50: 5003-5007, 1990). This increased activity may in part be responsible for the hypersialylation observed in leukemic leukocytes; however, hypersialylation may also be due to changes in underlying O-glycan structures. To test this hypothesis, we have assayed in normal human granulocytes and leukemic leukocytes several glycosyltransferases involved in the synthesis and elongation of the four common O-glycan cores. UDP-GlcNAc:Gal beta 1-3GalNAc-R (GlcNAc to GalNAc)

beta(1-6)-GlcNAc transferase (EC 2.4.1.102), which synthesizes O-glycan core 2 (GlcNAc beta 1-6[Gal beta 1-3]GalNAc alpha), is significantly elevated in chronic myelogenous leukemia (4-fold) and AML (18-fold) leukocytes relative to normal human granulocytes. Neither normal nor leukemic cells show detectable activities of GlcNAc transferases which synthesize O-glycan core 3 (GlcNAc beta 1-3GalNAc-R) and core 4 (GlcNAc beta 1-6[GlcNAc beta 1-3] GalNAc-R) or the blood group I structure. The beta 3-GlcNAc transferase which elongates core 1 and core 2 was found at low levels in normal granulocytes but was not detectable in leukemic cells. The beta 3-GlcNAc transferase and beta 4-Gal transferase involved in poly-N-acetyllactosamine synthesis, as well as the beta 3-Gal transferase synthesizing core 1 (Gal beta 3 GalNAc), were present in all samples but were significantly increased in patients with AML. The observed changes are consistent with hypersialylation in leukemia.

L2 ANSWER 31 OF 39 CAPLUS COPYRIGHT 2006 ACS on STN

AN 1992:421392 CAPLUS

DN 117:21392

TI The c-Ha-ras oncogene induces increased expression of β -galactoside

α -2,6-sialyltransferase in rat fibroblast (FR3T3) cells

AU Le Marer, Nadia; Laudet, Vincent; Svensson, Eric C.; Cazlaris, Haris; Van

Hille, Benoit; Lagrou, Christian; Stehelin, Dominique; Montreuil, Jean;

Verbert, Andre; Delannoy, Philippe

CS Lab. Chim. Biol., Univ. Sci. Tech. Lille-Flandres-Artois, Villeneuve

d'Ascq, 59655, Fr.

SO NATO ASI Series, Series A: Life Sciences (1991), 220 (Superfamily ras-Relat. Genes), 243-52

CODEN: NALSDJ; ISSN: 0258-1213

DT Journal

LA English

AB The authors studied the effect of various oncogenes such as c-ha-ras and

v-myc on the activity of β -galactoside sialyltransferases. It is

reported here that c-Ha-ras induces an increase of the activity of the

β -galactoside α -2,6-sialyltransferase (Gal- α -2,6-ST) but not of the β -galactoside α -2,3-sialyltransferase (Gal- α -2,3-ST). In addition, other oncogenes such as v-myc, v-src, polyoma virus middle T (mT) or the transforming

Bovine Papilloma Virus 1 (BPV1) did not enhance Gal- α -2,6-ST activity. This increased Gal- α -2,6-ST activity causes an increased

α -2,6 linked sialic acid on cell surface glycoconjugates.

Moreover,

this ras-mediated enhancement was shown to be caused by an increase of the

enzyme level and of the mRNA encoding Gal- α -2,6-ST.

L2 ANSWER 32 OF 39 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN

AN 1990:261471 BIOSIS

DN PREV199090003557; BA90:3557

TI TRANSFER AND EXPRESSION OF A MURINE UDP-GAL-BETA-D-GAL-ALPHA-1 3-GALACTOSYLTRANSFERASE GENE IN TRANSFECTED CHINESE HAMSTER OVARY CELLS

COMPETITION REACTIONS BETWEEN THE ALPHA-1 3 GALACTOSYLTRANSFERASE AND THE

ENDOGENOUS ALPHA-2 3 SIALYLTRANSFERASE.

AU SMITH D F [Reprint author]; LARSEN R D; MATTOX S; LOWE J B; CUMMINGS R D

CS DEP BIOCHEM, UNIV GEORGIA, ATHENS, GA 30602, USA

SO Journal of Biological Chemistry, (1990) Vol. 265, No. 11, pp. 6225-6234.

CODEN: JBCHA3. ISSN: 0021-9258.

DT Article

FS BA

LA ENGLISH

ED Entered STN: 5 Jun 1990

Last Updated on STN: 5 Jun 1990

AB The cDNA encoding a murine UDP-Gal: β -D-Gal- α 1,3-galactosyltransferase has recently been cloned and sequenced using a

transient expression method (Larsen, R. D., Rajan, V. P., Ruff, M. M.,

Kukowska-Latallo, J., Cummings, R. D., and Lowe, J. B. (1989) Proc.

Natl. Acad. Sci. U.S. A. 86, 8227-8231). This report describes the

construction and analysis of a Chinese hamster ovary (CHO) cell line in

which in vitro expression α 1,3-galactosyltransferase activity has

been achieved via transfer and expression of the murine α 1,3-galactosyltransferase gene. A primary aim of this research was

to explore the role of the α 1,3-galactosyltransferase in regulating glycoprotein and glycolipid biosynthesis. CHO cells were transfected with murine genomic DNA fragments from F9 cells and plasmid DNA containing a resistance gene to the antibiotic G418. Cells resistant to G418 were then selected for expression of surface glycoconjugates containing terminal α 1,3-galactosyl residues by isolating cells bound to immobilized Griffonia simplicifolia-I-B4, a lectin which binds to α 1,3-galactosyl residues. A positive, stable transfectant clone, designated Clone 3, was obtained and analyzed for expression of the murine α 1,3-galactosyltransferase. Fluorescence-activated cell sorting demonstrated that Clone 3, but not parental, CHO cells bound significant amounts of fluorescein isothiocyanate-labeled G. simplicifolia-I-B4. Southern and Northern blot analyses using the murine α 1,3-galactosyltransferase cDNA demonstrated that clone 3, but not parental, CHO cells contain murine α 1,3-galactosyltransferase genomic DNA sequences, and express a homologous transcript that comigrates with the authentic 3.6 kilobase α 1,3-galactosyltransferase murine mRNA. Enzyme assays confirmed that clone 3, but not parental CHO cells, contained the α 1,3-galactosyltransferase activity and that the level of activity is comparable to that found in F9 cells.

[3H]Galactose-labeled glycopeptides and glycolipids were obtained from metabolically radiolabeled parental and Clone 3 cells and were analyzed for the presence of terminal α 1,3-galactosyl residues. Complex-type, Asn-linked oligosaccharides from both parental and Clone 3 cells contain the repeating disaccharide [3Gal β 1, 4GlcNac β 1] $_n$ or poly-N-acetyllactosamine sequences, but only the poly-N-acetyllactosamine chains from clone 2 cells contained the terminal sequence Gal α 1, 3 \rightarrow α 1, 4GlcNac β 1-R. Although the average lengths of the poly-N-acetyllactosamine from both parental and Clone 3 cells are comparable, the degree of terminal sialylation of the poly-N-acetyllactosamine with α 2,3-linked sialic acid was reduced in poly-N-acetyllactosamine from Clone 3 in proportion to the appearance of terminal α 1,3-galactosyl residues in the transfectant. These results indicate that the α 2,3-sialytransferase and the α 1,3-galactosyltransferase complete

in vivo for the β -galactosyl residues in
poly-N-acetyllactosamine
chains synthesized by Clone 3 cells. The glycolipid profiles of
both the
parental and Clone 3 cells are indistinguishable, suggesting
that the
murine α 1,3-galactosyltransferase in Clone 3 does not add
 α 1,3-galactosyl residues to lactosylceramide in vivo. These
studies
illustrate the use of gene transfer approaches for the
generation of
cultured cells lines with altered glycosylation phenotypes.
Permanent
transfectants selected for expression of neoglycan structures
will be
useful in addressing questions concerning the importance of a
variety of
factors, including enzyme competition, in the regulation of
glycoconjugate
biosynthesis.

L2 ANSWER 33 OF 39 BIOSIS COPYRIGHT (c) 2006 The Thomson
Corporation on

STN

AN 1990:450327 BIOSIS

DN PREV199090100967; BA90:100967

TI HUMAN LEUKEMIC MYELOBLASTS AND MYELOBLASTOID CELLS CONTAIN THE
ENZYME CMP

N ACETYLNEURAMINIC ACID

GAL-BETA-1-3-N-ACETYL GALACTOSAMINE-ALPHA-2-3-
SIALYLTRANSFERASE.

AU KANANI A [Reprint author]; SUTHERLAND D R; FIBACH E; MATTA K L;
HINDENBURG

A; BROCKHAUSEN I; KUHN W; TAUB R N; VAN DEN EIJNDEN D H; BAKER
M A

CS TORONTO GEN HOSP, MULOCK LARKIN WING 1-005, 200 ELIZABETH ST,
TORONTO, ONT

M5G 2C4, CAN

SO Cancer Research, (1990) Vol. 50, No. 16, pp. 5003-5007.

CODEN: CNREA8. ISSN: 0008-5472.

DT Article

FS BA

LA ENGLISH

ED Entered STN: 7 Oct 1990

Last Updated on STN: 7 Oct 1990

AB We have examined the role of CMP-NeuAc:Gal β 1-3GalNAc-R α (
2-3)-**sialyltransferase** in fresh leukemia cells
and leukemia-derived cell lines. Enzyme activity in normal
granulocytes
using Gal β 1-3GalNAc α -o-nitrophenyl as substrate was $1.5 \pm$
 0.7 nmol/mg/h whereas activity in morphologically mature
granulocytes from

6 patients with chronic myelogenous leukemia (CML) was 4.2 ± 1.6 nmol/mg/h ($P < 0.05$). Myeloblasts from 5 patients with CML in blast crisis showed enzyme activity levels of 6.5 ± 2.5 nmol/mg/h. From 2 patients with CML, both blasts and granulocytes were obtained, with higher enzyme activity in the patients' blasts (7.1 nmol/mg/h) than in their granulocytes (4.9 nmol/mg/h) in both cases, suggesting that the increase in enzyme activity is related to the differentiation or proliferation status of the CML cells. However, similarly high enzyme levels were also seen in myeloblasts from acute myeloblastic leukemia patients (5.6 ± 1.4 nmol/mg/h) and in some acute myeloblastic leukemia-derived cell lines (KG1a and HL60), suggesting that increased levels of this enzyme are not directly correlated with the presence of the Ph1 chromosome. This $\alpha(2-3)$ -sialyltransferase activity can also be detected in normal peripheral blood lymphocytes and exhibits increased activity in chronic lymphocytic leukemia cells and acute lymphoblastic leukemia. These data suggest that the level of enzyme activity may vary with growth rate and maturation status in myeloid and lymphoid hemopoietic cells. Finally, we have identified a glycoprotein in acute myeloblastic leukemia cells that serves as a substrate for the $\alpha(2-3)$ -sialyltransferase. The desialylated form of the glycoprotein was resialylated in vitro by the purified placental form of this $\alpha(2-3)$ -sialyltransferase and exhibits a molecular weight of about 150,000.

L2 ANSWER 34 OF 39 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on

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AN 1990:492167 BIOSIS

DN PREV199090120513; BA90:120513

TI POSTNATAL DEVELOPMENT OF RAT COLON EPITHELIAL CELLS IS ASSOCIATED WITH

CHANGES IN THE EXPRESSION OF THE BETA-1 4-N ACETYL GALACTOSAMINYLTRANSFERASE

E INVOLVED IN THE SYNTHESIS OF SD-A ANTIGEN AND OF ALPHA-2 6 SIALYLTRANSFERASE ACTIVITY TOWARDS N ACETYLLACTOSAMINE.

AU DALL'OLIO F [Reprint author]; MALAGOLINI N; DI STEFANO G; CIAMBELLA M;

SERAFINI-CESSI F

CS DIPARTIMENTO DI PATOLOGIA SPERIMENTALE DELL'UNIVERSITA DI
BOLOGNA, VIA S

GIACOMO 14, 40126 BOLOGNA, ITALY

SO Biochemical Journal, (1990) Vol. 270, No. 2, pp. 519-524.
ISSN: 0264-6021.

DT Article

FS BA

LA ENGLISH

ED Entered STN: 5 Nov 1990

Last Updated on STN: 6 Nov 1990

AB β 1,4-N-acetylgalactosaminyltransferase (β 1,4GalNAc-transferase)
and α 2,3-**sialytransferase** are both

involved in the biosynthesis of the Sda blood group antigen,
which is also

present in cells of large intestine. The expression of these
enzymes and

of α 2,6-sialytransferase activity towards N-acetyl-lactosamine
was

investigated in rat intestinal cells and correlated with both
cell

differentiation and extent of postnatal maturation. The

β 1,4GalNAc-transferase activity was exclusively found in
epithelial

cells of the large intestine, preferentially in the proximal
segments

suggesting a proximal-distal gradient of expression. The

β 1,4GalNAc-transferase and α 2,3-

sialytransferase activity towards N-acetyl-lactosamine were
expressed in all cell fractions of the colonic crypt, with a
maximum

activity in the deeply located cells; therefore Sda antigen
biosynthesis

appears to occur preferentially at a specific stage of cell
differentiation. By using N-acetyl-lactosamine as an acceptor,
the

predominant sialytransferase in the colon cells was that capable
of adding

sialic acid in the α 2,3-linkage, whereas in the ileum cells the
major enzyme was that forming the α 2,6-isomer. There were

dramatic

changes in the expression of colonic β 1,4GalNAc-transferase and

of

α 2,6-sialytransferase activity towards N-acetyl-lactosamine

during

postnatal maturation. The former enzyme, practically absent at
birth,

increased slowly in the first days of life and then rapidly
after weaning;

by contrast, the latter enzyme was largely expressed only in
newborn

animals. As the colonic α 2,3-

sialytransferase activity towards N-acetyl-lactosamine did not change during the postnatal period, the ratio between the $\alpha 2,6$ - and $\alpha 2,3$ -**sialytransferase** activities was reversed after weaning.

L2 ANSWER 35 OF 39 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN

AN 1988:223480 BIOSIS

DN PREV198885112715; BA85:112715

TI SPECIFIC EXPRESSION OF A MYELOID-ASSOCIATED CMP N ACETYLNEURAMINIC ACID

GALACTOSE-BETA-1-3-N-ACETYL GALACTOSAMINE-ALPHA-R ALPHA-2-3-**SIALYTRANSFERASE** AND THE SIALYL-X DETERMINANT IN

MYELOID HUMAN-MOUSE CELL HYBRIDS CONTAINING HUMAN CHROMOSOME 11.

AU DE HEIJ H T [Reprint author]; TETTEROO P A T; GUERTS VAN KESSEL A H M;

SCHOENMAKER E; VISSER F J; VAN DEN EIJNDEN D H

CS DEP MED CHEM, VRIJE UNIV, PO BOX 7161, 1007 MC AMSTERDAM, NETH
SO Cancer Research, (1988) Vol. 48, No. 6, pp. 1489-1493.
CODEN: CNREA8. ISSN: 0008-5472.

DT Article

FS BA

LA ENGLISH

ED Entered STN: 4 May 1988

Last Updated on STN: 4 May 1988

AB Human-murine myeloid somatic cell hybrids were assayed for the expression

of the myeloid-associated sialyl-X determinant. This determinant is

expressed at the surface of hybrid cells containing human chromosome 11,

but its expression could not be correlated with the presence of the

sialytransferase which is involved in the sialyl-X synthesis.

The

sialyl-X determinant, however, is simultaneously expressed with another

$\alpha 2 \rightarrow 3$ -sialyltransferase activity, which is involved in the sialylation of the O-linked Gal β 1 \rightarrow GalNAc α -R core

structure. Chromosomal analyses and enzymatic data suggest that human

chromosome 11 is involved in the expression of both the sialyl-X antigen

and this $\alpha 2 \rightarrow 3$ -sialyltransferase.

L2 ANSWER 36 OF 39 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN

AN 1988:484030 BIOSIS

DN PREV198886115340; BA86:115340

TI BIOSYNTHESIS OF THE CANCER-ASSOCIATED SIALYL-LE-X DETERMINANT IN
HUMAN AMNIOTIC FLUID.

AU MITSAKOS A [Reprint author]; HANISCH F-G; UHLENBRUCK G
CS INSTITUT FUER IMMUNBIOLOGIE, MEDIZINISCHE UNIVERSITAETSKLINIK
KOELN,

KERPENER STR 15, D-5000 KOELN 41

SO Biological Chemistry Hoppe-Seyler, (1988) Vol. 369, No. 8, pp.
661-666.

CODEN: BCHSEI. ISSN: 0177-3593.

DT Article

FS BA

LA ENGLISH

ED Entered STN: 1 Nov 1988

Last Updated on STN: 1 Nov 1988

AB Biosynthesis of the sialyl-Lex determinant (NeuAc α 2-3Gal β 1-
4(Fuc α 1-3)-GlcNAc β 1-3-R) in human amniotic fluid has been shown
to proceed via the same sequence of glycosylation steps
established

previously for lung carcinoma PC9 cells (Holmes, E.H.,
Ostrander, G. K.

and Hakomori, S.(1986) J. Biol. Chemical 261, 3737-3743):
sialylation of

type-2-chain-precursor substrates (paragloboside) by an amniotic
 α

2-3-sialyltransferase precedes fucosylation of
sialylated intermediates (sialosyl paragloboside) by an
organ-characteristic α 1-3-L-fucosyltransferase.

L2 ANSWER 37 OF 39 BIOSIS COPYRIGHT (c) 2006 The Thomson
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STN

AN 1989:5424 BIOSIS

DN PREV198987005424; BA87:5424

TI HEPARIN INHIBITS SPECIFIC GLYCOSYLTRANSFERASE ACTIVITIES IN
INTERLEUKIN 2

ACTIVATED MURINE T CELLS.

AU SCHWARTING G A [Reprint author]; GAJEWSKI A

CS DEP BIOCHEM, E K SHRIVER CENT, WALTHAM, MASS 02254, USA

SO Bioscience Reports, (1988) Vol. 8, No. 4, pp. 389-399.

CODEN: BRPTDT. ISSN: 0144-8463.

DT Article

FS BA

LA ENGLISH

ED Entered STN: 6 Dec 1988

Last Updated on STN: 6 Dec 1988

AB In order to better understand the role of cell surface
glycolipids in T

lymphocyte activation, heparin was used to simultaneously
modulate the

expression of glycolipids and the lytic capacity of lymphocytes
activated

by interleukin-2. Results presented here show that heparin added at the start of a 3 day culture inhibited the formation of lymphokine activated killer cells by up to 50%. Heparin also has a profound effect on the synthesis of glycolipids during this three day period. Asialo GM1, a useful cell surface marker for subsets of murine cytotoxic cells, is reduced in amount, as are the other two major neutral glycolipids lactosylceramide and asialo GM2. In addition, the synthesis of some gangliosides is affected by heparin treatment. Comparison of the glycosyltransferase activities of untreated and heparin-treated cells shows that the activities of a 2-3-sialyltransferase and a β 1-3 galactosyltransferase are inhibited dramatically, while a third enzyme, N-acetyl-galactosaminyltransferase is unaffected. The two heparin inhibitable enzymes bind to heparin affinity columns but the galactosaminyltransferase does not. These studies suggest that the proper regulation of the activities of specific glycosyltransferases may be important events in lymphocyte activation.

L2 ANSWER 38 OF 39 EMBASE COPYRIGHT (c) 2006 Elsevier B.V. All rights reserved on STN

AN 86235271 EMBASE
DN 1986235271

TI Identification of the O-linked sialyloligosaccharides of glycophorin A as the erythrocyte receptors for S-fimbriated Escherichia coli.

AU Parkkinen J.; Rogers G.N.; Korhonen T.; et al.

CS Department of Biochemistry, Biocenter, University of Basel, CH-4056 Basel, Switzerland

SO Infection and Immunity, (1986) Vol. 54, No. 1, pp. 37-42. .
CODEN: INFIBR

CY United States

DT Journal

FS 004 Microbiology
025 Hematology
029 Clinical Biochemistry

LA English

ED Entered STN: 10 Dec 1991

Last Updated on STN: 10 Dec 1991

AB The erythrocyte receptors for S-fimbriated Escherichia coli, which causes

sepsis and meningitis in newborn infants, were investigated. Neuraminidase and trypsin treatments of erythrocytes abolished the hemagglutination ability of the bacteria. To identify the receptor glycoproteins, we separated erythrocyte membrane proteins by gel electrophoresis, blotted them to nitrocellulose, and incubated them with ¹²⁵I-labeled bacteria. The only bacterium-binding bands identified corresponded to glycophorin A dimer and monomer, and the binding was abolished by neuraminidase treatment of the blot. Radiolabeled bacteria also bound to purified glycophorin A adsorbed to polyvinyl chloride microwells, and the binding was inhibited by other sialoglycoproteins and isolated sialyloligosaccharides containing the NeuAc α 2-3Gal sequence. Oligosaccharides which contain the NeuAc α 2-3Gal β 1-3GalNAc and NeuAc α 2-3Gal β 1-3(NeuAc α 2-6)GalNAc sequence and which are identical to the O-linked saccharides of glycophorin A were twofold more effective inhibitors of binding than were other oligosaccharides containing the NeuAc α 2-3Gal sequence. The replacement of sialic acid in asialoerythrocytes with a purified Gal β 1-3GalNAc α 2-3 **sialyltransferase**, which forms the O-linked NeuAc α 2-3Gal β 1-3GalNAc sequence in asialoglycophorins, restored bacterial hemagglutination. These results indicated that the major erythrocyte receptor for S-fimbriated E. coli is the NeuAc α 2-3Gal β 1-3GalNAc sequence of the O-linked oligosaccharide chains of glycophorin A.

L2 ANSWER 39 OF 39 MEDLINE on STN

AN 81077239 MEDLINE

DN PubMed ID: 6255459

TI Sendai virus utilizes specific sialyloligosaccharides as host cell

receptor determinants.

AU Markwell M A; Paulson J C

NC AI-15629 (NIAID)

AI-16165 (NIAID)

CA-16042 (NCI)

+

SO Proceedings of the National Academy of Sciences of the United States of

America, (1980 Oct) Vol. 77, No. 10, pp. 5693-7.

Journal code: 7505876. ISSN: 0027-8424.

CY United States

DT Journal; Article; (JOURNAL ARTICLE)

LA English
 FS Priority Journals
 EM 198102
 ED Entered STN: 19900316
 Last Updated on STN: 19970203
 Entered Medline: 19810226
 AB Purified sialyltransferases
 (CMP-N-acetyl-neuraminate:D-galactosyl-
 glycoprotein N-acetylneuraminyl-transferase, EC 2.4.99.1) in
 conjunction
 with neuraminidase (acylneuraminyl hydrolase, EC 3.2.1.18) were
 used to
 produce cell surface sialyloligosaccharides of defined sequence
 to
 investigate their role in paramyxovirus infection of host cells.
 Infection of Madin-Darby bovine kidney cells by Sendai virus was
 monitored
 by hemagglutination titer of the virus produced and by changes in
 morphological characteristics. By either criterion, treatment
 of the
 cells with *Vibrio cholerae* neuraminidase to remove cell surface
 sialic
 acids rendered them resistant to infection by Sendai virus.
 Endogenous
 replacement of receptors by the cell occurred slowly but
 supported maximal
 levels of infection within 6 hr. In contrast, sialylation
 during a 20-min
 incubation with CMP-sialic acid and beta-galactoside alpha 2,
3-sialyltransferase restored full susceptibility to
 infection. This enzyme elaborates the NeuAc alpha 2,3Gal beta
 1,3GalNAc
 (NeuAc, N-acetylneuraminic acid) sequence on glycoproteins and
 glycolipids. No restoration of infectivity was observed when
 neuraminidase-treated cells were sialylated by using
 beta-galactoside
 alpha 2,6-sialyltransferase, which elaborates the NeuAc-alpha
 2,6Gal beta
 1,4GlcNAc sequence. These results suggest that
 sialyloligosaccharide
 receptor determinants of defined sequence are required for
 Sendai virus
 infection of host cells.